Bring up Plan and Test Plan

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| --- | --- | --- |
| 1 | Look at the board with Microscope |  |
| 2 | Check for Shorts | Esp. b/n Power and Ground |
| 3 | Make sure global power is right | use bench supply and apply power to power and ground |
|  |  | current should not go up with voltage |
|  |  | measure voltage on all pads where **global** power is expected |
|  |  | If power is missing, fix the problem |
| 4 | Local Power | Populate the regulator sections |
|  |  | Make sure local powers are as expected |
| 5 | Bias Voltage Verification | List out all the expected DC Bias voltages and verify them |
| 6 | Populate the MCU |  |
| 7 | Populate Crystal | Check if it’s oscillating |
| 8 | Populate the UV Sensor |  |
| 9 | Populate the Ambient Light Sensor |  |

A diagram of a circuit board

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Detailed Plan:

1. Inspect the board with Microscope
   1. Check for any irregularities in trace etc.
   2. Compare different PCBs (as we’ll have 5 of them)
2. Use DMM to check for shorts, open etc.
   1. Most important being between ground and supply
3. Populate component related to supply i.e. LDO
   1. Check if LDO is giving correct o/p i.e. 3.3V
   2. Make sure supply is not oscillating
   3. Once able to get 3.3V at the output of LDO, short the jumper so that 3.3V supply reaches everywhere
   4. A computer screen shot of a circuit board

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   5. Check the supply values everywhere 3.3V is supposed to be going.
4. Populate the MCU and Reset
   1. Check voltages at the VDD pin etc.
5. Populate the Crystal
   1. See if it’s oscillating
   2. Check it’s frequency
   3. If not oscillating try with different capacitor value
6. Populate UV sensor
7. Populate Ambient Light Sensor
8. Populate bootloader
9. Whole board is populated now, let’s upload the bootloader.

Things which could go wrong and how to test for it (DVT) step-by-step?

* Populate everything in one go except the 0 Ohm solder jumper
* Check LDO output if 3.3V then connect the jumper such that it gives supply to whole PCB
  + If LDO output is not correct then check the USB connection and LDO IC
  + Might have to reflow
* If 3.3V output is correct, let’s move to the next step
* Connect the solder jumper which is disconnecting 3.3V supply from the rest of the PCB
  + Carefully check the current value (it should be stable)
  + If not turn it off and debug
  + Most probably something is getting shorted!!
* Check the supply value near the MCU decap
  + Make sure it’s not oscillating
  + If yes, that means decap value is smaller than expected
  + Try with higher decap value!!
* Once it’s ensured that supply and ground values are correct near MCU
  + Let’s upload the bootloader!!